supreme greatness of his first work or by the affection and reverence in which the Royal College of Physicians naturally and rightly holds him. The consensus of their opinion is that Harvey's second book, though it contains many interesting observations, is yet full of the prejudices of an earlier age and has many errors which a closer application, further experiment or the use of one of the then very popular hand lenses – let alone of a microscope – would have avoided. The thought of the book is mainly Aristotelian in Cremonini's sense.

Harvey was a most expert follower of Galileo in his experimental method, a superb experimenter and an unsurpassed deviser of physiological experiments. But he was alike by temper and training a follower of the older paths in all that pertains to philosophy. In his conceptions of the world his thought was all aligned to Aristotle rather than to the great men of his own time. On such matters Copernicus and Bruno, Kepler and Galileo might as well not have written, so far as Harvey was concerned. When he turned to the great problem of generation which was then quite insoluble on experimental lines, he was overwhelmed by his own conservative philosophy.

The biologists of our time, as indeed many of his own, have thought of themselves as advancing into new and untrodden tracts. This, however, was not how Harvey thought of himself. Even in enunciating his great discovery of the circulation he almost disclaims originality and suggests that he is but returning to Aristotle or – allowing for his modesty – expounding and enlarging him. And when he turns to generation, he is wholly for Aristotle's vicar, Cremonini.

Thus although Harvey is indisputably one of the great initiators of modern science, it would be possible to treat him as a belated exponent of the mediæval tradition. We do not meet with any considerable figure after him who works and thinks in his conservative tradition. As we leave this contemporary of Bacon and Descartes and his quaint quotation of an Aristotle misunderstood, we pass into a world not only of new discoveries but of a new outlook. Harvey stands just on the frontier. He is in the new world and yet not of it. Even his experimental method he would regard as a reconstruction rather than a new creation. So let him remain as a man of that one little book which is all that he needs for greatness. And then we may safely echo Joseph Glanvill (1636–80) in his attack on the scholastic philosophy that 'the world hath now done *right* to his *Memory*, and his *Name* rests quietly in the Arms of *Glory*'.

Charles Singer, the Man and the Historian

by E Ashworth Underwood MD
(*Wellcome Historical Medical Museum, London*)

I was greatly honoured by the request of the President and Council of this Section that I should say something about Charles Singer at this meeting. At first I felt doubtful whether I should accept; for after all I had already written something about him, and it seemed to me right that some other friend of Singer's should give this address. But then it occurred to me that I might have a few things to say which are not generally known, and a few anecdotes to relate which might help others who knew him to draw upon their store of memories, and to create, in the minds of those who knew him not, a picture of one of the most interesting medical personalities of our time.

I think it would be right to say that Charles Singer was first of all – not only in time but by training and inclination – a physician and a pathologist. The historical field which he later cultivated so earnestly and with such success was for long purely accidental, and incidental to his main work. We may recall that he qualified in 1903, and that, including the years when he held a commission in the R.A.M.C. during the First World War, he was engaged in clinical medicine, in clinical pathology, and in pathological research for no less than fifteen years. During this time he took his Oxford BM and DM, and became a Member and later a Fellow of the Royal College of Physicians. Throughout his life he remained greatly attached to that College, and greatly interested in its various activities. On the day on which he passed his Conjoint Qualification he was appointed as medical officer to an expedition to delimit the Abyssinian frontier with the Sudan, and on his return a year later he published a paper dealing with some interesting clinical conditions met with by the expedition. After holding various hospital posts in this country and in Singapore, he became in 1908 registrar to the Cancer Hospital, and in the following year physician to the Dreadnought Hospital. Until he departed for Oxford at Osler's invitation in the summer of 1914, Singer was immersed in professional work in these hospitals and for a time also as a consulting physician in Upper Brook Street.

During his early period at these hospitals he devised and published in 1910 one of the earliest clinical instruments for recording the blood pressure graphically. In 1911 he published a long

study of the ætiology of oral carcinoma. But by 1912 he had come under the influence of S B Schryver, FRS, at the Cancer Hospital, and was engaged on those very interesting studies of the gastric juice and its relation to gastric carcinoma. Singer used later to recall with some philosophic amusement that, at the very time when the Nobel Prize was awarded to Fibiger for his studies on *Spiroptera* carcinoma, he – Singer – was obtaining independently at the Cancer Hospital almost identical results. Singer's work was of course published – it was first given at the International Congress of Medicine in London in 1913 – but there was no Nobel Prize for him!

During the years when this work was going on Singer had embarked upon what was to be the main occupation of his life. I suggested just now that it was an accident – and an accident indeed it was. This is how it happened. Some time about the spring of 1911 he was browsing in a bookshop, in Kensington High Street I think, and he discovered and bought for a few pence a book by Benjamin Marten entitled 'A New Theory of Consumptions'. On reading through this book Singer was struck by the fact that Marten had foreshadowed the microbic theory of tuberculosis. He contributed to the *Lancet* a short account of this book, and almost immediately afterwards he published a longer account in *Janus*. In the following year (1912) he wrote an interesting series of short articles on the history of certain tropical diseases; and in 1913 he returned to the microbic theory with a concise account of the rise of the doctrine of the *contagium vivum*. In collaboration with Dorothea Singer he soon expanded this account and presented it at the International Medical Congress. In the same year he published a long paper on the early history of tobacco which was much used by later workers. About October of that year he also presented the first of the papers which he delivered before this Section. It covered only two pages, dealt with St Hildegard of Bingen, and was to have important consequences. The historian was born.

It is no part of my purpose to deal in any detail with either the life or the individual writings of Charles Singer. But if I am to attempt to give a picture of the whole man, I must refer briefly to certain matters. I now come to a case in point. A lot of ink was at one time spilt – mainly by non-historians – over the rather stupid question whether history repeats itself. Whether or not that is the case, history sometimes does present interesting parallels. You will remember that when Osler, in Baltimore, was offered the Regius Chair at Oxford, he was in great doubt whether he should accept. Osler was then in London and Mrs Osler was in America. Osler wrote to her about his difficult decision. By return he received from her a cable which said: 'Do not procrastinate. Accept at once.' In the early summer of 1914 Singer had a telephone call from Osler, who offered him a studentship in pathology, the duties of which were to be mainly historical. While searching his mind for a decision Singer began to explain certain of his difficulties, but Osler cut in with a brief remark: 'Is your wife in? Let me speak to *her*.' That he did, and the result was that the Singers went to Oxford.

Thus began a period in Singer's life which I may call that of 'productive doubt'. In that year (1914) he published a short paper on a transplantable tumour in the rat's uterus. This was the last clinical or pathological paper which he was ever to publish. In that year he also published the first of his papers on the history of microscopy, and in the three following years, while he was on active service, he succeeded in writing two books and about seventeen important papers on historical subjects. When we recollect that he was in Malta and at Salonika during much of this time, the difficulties can be imagined. One of the most important of these papers was that on the scientific views and visions of Hildegard of Bingen. The manuscripts on this subject were mostly in Germany, and he had worked on them there before the war. The completed version of the paper itself was with him again in Germany in the first days of August 1914. He and his wife were returning home, and they were staying in a small town near the German-Dutch frontier. They used to go off for a walk which sometimes lasted the whole day. One day they were returning in the evening when they found that they were allowed to proceed no farther. They had unwittingly wandered into Holland, and during the day the frontier had been closed because of the imminent declaration of war. They got back home from Holland; but their luggage, alas! remained in Germany, and the manuscript was lost. Singer had to rewrite the whole long paper from his original notes, and it appeared in 1917 as the first 55 pages of the first volume of his 'Studies in the History and Method of Science'.

Despite these great advances which he had made in the history of medicine and of science, I believe that in this period until about 1920 Singer had not put a clinical or pathological career completely behind him. But his war work had been to a great extent of a routine nature, and his last clinical and pathological papers had been written when he was 37. When the war ended he was 42, and he had no worth-while connexion with any of the teaching schools. On his return to Oxford he

found that both men and conditions had changed, and the post he held there was merely a lectureship in the history of biology. It is understandable that, though he had by then accomplished much in the history of medicine, he should have been in some slight doubt as to the direction in which he ought to turn.

It was really Singer's appointment as lecturer in the history of medicine at University College London, and his subsequent departure from Oxford that fixed his career. He was at the College in all for nearly twenty-two years. During the first ten years he was a lecturer. Then in the Session of 1930–31 he had conferred on him the title of Professor of the History of Medicine in the University of London. During the last few years before he retired, the war led to a suspension of his activities at the College. The first twelve years of his association with the College (1920–32) were possibly the most productive in his life of original work done largely by himself. This period saw the publication of the second volume of his 'Studies', containing his first serious study of Greek biology and medicine; of his FitzPatrick Lectures; of his two important studies of mediæval anatomical texts; of two of his three short histories; of the collection of certain of his papers published under the title 'From Magic to Science'; of his work on Anglo-Saxon medicine and on the herbal in antiquity; and of several shorter works.

I think Singer attributed much of his great productivity at this period to the fact that he was greatly in sympathy with the intellectual atmosphere at University College at that time. He certainly received backing and encouragement from some of the professors who were then at the College, and as a brilliant talker with wide interests he probably gave as much as he received. Many stories which he liked to tell date from this period, and were associated with the Common Room. This was then a small room, and in the short period after lunch it was generally crowded and heavy with smoke. With his philological interests Singer was always very amused to tell of an incident which he said happened in that room. For some days there had been a hot argument among a group of members regarding the Hottentot language, in which the words are pronounced on inspiration rather than on expiration, giving a series of 'inspiratory clicks'. After several days of argument on this matter one of the group said that he could prove his point as he had a Hottentot outside. He was asked to bring him in, which he did. Everyone crowded round to hear, smoking furiously. The Hottentot was asked to speak. He got out – or rather clicked in – a few sentences, swallowed the smoke, at once collapsed, and had to be carried from the room.

During his early University College period Singer developed his fundamental interest in the history of medicine and in the early history of science. He developed also his own peculiar methods of working, and his style. Where basic research into a problem was necessary he came gradually round to a point where junior scholars were used to dig out the material, or the works containing that material, so that he could himself then more easily and more rapidly draw his own conclusions from the available evidence and compose the work which he had in mind. It was not everyone's method, but it seemed to suit him. Later in life he often farmed out the preliminary work to paid temporary assistants: work such as the preparation of a rough translation of a text. Perhaps in that way he missed some of the finer points; but these would in any case have been appreciated only by scholars like himself.

It could be said of Singer that he literally thought with a pen in his hand. When once he had got hold of some interesting idea he would sit down and write about it out of his head. He would then refer to some standard works, and, in the light of any further information which he had thus picked up, he would re-write the whole article or passage, polishing and incorporating this new material. Then he would consult other works of a less standard nature, and the whole revision would be repeated. This evolutionary process might go on until he had as many as ten drafts. It was a peculiar method of working; not uncommon, to be sure, but I have never known anyone who carried it to quite the lengths that he did.

I have little doubt that the greatest influence in engendering Singer's style as we usually know it was the English Bible in the Authorized Version. There was never a day in which the Book was not in his hand at some time or other, and I have never known a layman who had drunk so fully of its deeper meaning. Truly the Book was his *comes viæ vitæque.*

It is proper that I should say something about Singer's connexion with this Section. When the Section was formed in 1912 under Osler's presidency, Singer was one of the original members. He gave his first paper before the Section – his short preliminary note on St Hildegard – on November 9, 1913. At the elections in the following year he was put on the Council, and from 1916 to 1919 he acted as Honorary Secretary, although he was abroad during much of the time. From

1920 to 1922 he was President of the Section. But perhaps his most valuable service to the Section was his long period of twenty-three years (1918 to 1941) during which as Editorial Representative he fought hard to maintain a very high standard in the Section's published papers. I could mention several examples of his devotion to this work, but one will suffice. It was at a meeting – getting on for thirty years ago – when the paper was being given by a foreigner whose English was not too good and whose paper was rather dull. At the end of an hour he was still speaking. It was not so very long after traffic lights had been first installed in our cities, and some kind benefactor had presented the Society with a miniature version, to be used on just such an occasion. My recollection is that it was treated like a new toy, and that the green light was switched on when a speaker started to speak. None of us had ever seen any other colour. On this occasion the President now ventured to press a switch, and the green changed to yellow. Nothing else happened. After five further minutes, the President pressed the switch again, and the light changed to red. The speaker still continued, and it was at least a quarter of an hour later before he was prevailed upon to stop. The point of this story is that, after the meeting there was some private discussion about the publication of the paper. Singer was asked his opinion, and I distinctly remember him saying that, to make it fit for publication, he would have to spend a week's whole-time work on it in the British Museum. My recollection is that the paper was never published.

It was during this period of Singer's life, after his extended trip to America and when he was spending a good part of each year at his house in Cornwall, that an apparent change took place in his activities. It was, as one might have thought, as if he had finished his work, and was now relaxing in the light of a successful career. But such was not the case. Although he wrote relatively little, mainly reviews and other ephemeral writings, he was active in another cause. It was at this time that the first rumblings which were to presage the later enormities of Nazi Germany began to reach this country, and Singer, as one of the founders and very active members of the Society for the Protection of Science and Learning, spent years of hard work in the cause which he had so much at heart. It was only those who worked with him on the Council of that Society who could appreciate how much he did for refugee scholars, during the time when his wife was doing so much for the girls who later became trained nurses in this country.

For a picture of him at this time I think we might well go to one of the lesser Hippocratic treatises to which he was so devoted – that one in which the writer says that the dignity of the physician requires that he should look healthy and as well-fleshed – εὔχρως καὶ εὔσαρκος – as nature intended. From his early years Singer had been sturdy and of an athletic build – although games and formal athletics he was inclined to despise. He was a great walker and he loved the sea and bathing. He continued to bathe in the sea until he was well into his 70s.

Despite the great sense of a world going mad which he was at this time suffering, Singer's boyish good humour and puckishness kept many unaware of his real feelings. Indeed, how could it be otherwise, when he continued, and developed, those amusing tricks which were liable to catch out the unwary. There were, for example, his fake broadcasts, of which one example will suffice. It was the occasion when a former Provost of University College London, now long deceased, and several other friends, were staying at his home in Cornwall. At 9 p.m. the news was switched on. and as the chimes of Big Ben died away the announcer said:

'This is the news. A small child sucking a large ice-cream cone on Brighton Pier has observed a sensible depression coming in from the south-west. There was an altercation between Townsmen and Students outside the Bodleian Library, Cambridge – I beg your pardon, Oxford [the Provost looked slightly quizzical] – this afternoon, but no blood was shed. We regret to announce an unusual happening in London this afternoon. A lion escaped from the Zoo in Regent's Park, and after an exciting chase through the streets it was eventually driven into the quadrangle at University College. [The Provost sat bolt upright and listened intently.] The lion, harassed not only by the authorities but also by crowds of students, wielding various missiles, took refuge in the Provost's room, where it still is and where it is feared the brute has caused much damage. In fact, we regret to say that the Provost's room can no longer be regarded as the room of a Provost.'
[The Provost had by then seen the light, and enjoyed the joke.]

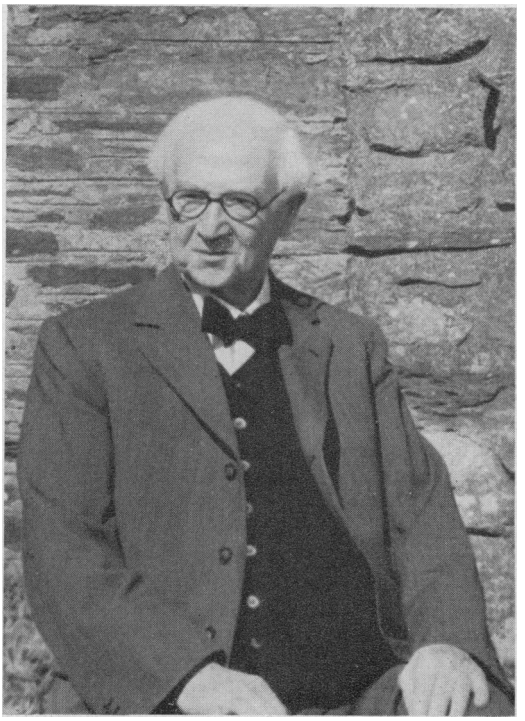
Of Singer's work in the history of medicine I can give here only the briefest précis of his importance. In his own field he was a pioneer in this country. A few Continental countries had had distinguished historians of this subject during the nineteenth century; but in Great Britain there had been – as Singer pointed out in his inaugural lecture of 1920 – practically only Francis Adams. Singer was therefore the first in this country to give to the subject more than the leavings of his mind, and the first to gain for it a semblance of academic recognition. From a very early period in

his career he mapped out by various papers his main interests during succeeding years, and he hardly deviated from that unwritten programme.

In his various non-specialized books he was full of knowledge, interesting and concise. He could give very detailed information about some little-known points and then, in the same work, be careless over such trivialities as dates and quotations. One sometimes had the feeling that he considered that attention to such matters held up the course of his work. I think the real explanation was that he felt that he ought to leave such matters to someone else to put right – whether or not he had anyone at the time who was competent to deal with them. He often used to say 'I have always had someone to do these things for me'.

In the matter of illustrations Singer's flair was superb. He had an uncanny knowledge of the sources of likely material, and when he had exhausted the sources for a particular subject, there was often not much left for others. Having obtained his material his invariable habit was to have the illustration redrawn if it was not already suitable for reproduction in line. This method was not acceptable to everyone; and it is also a matter for regret that he often did not give the real source of his illustration – whether an original painting or an engraving made from it.

In writing his numerous semi-popular articles Singer always adopted the principle of never putting more than a few points in one article. 'Never give them too much', he used to say. The paper which we have just heard is, I think, intended to be, despite its shortness, of a more serious nature. From internal evidence this paper seems to have been written late in 1957, and the Harvey tercentenary probably provided the stimulus. I find this paper intriguing because it represents an attempt on Singer's part to grapple with a problem which had long interested him. William Harvey made one of the greatest discoveries in science; a discovery moreover which was not the result of chance, but was due to a long series of careful experiments which proceeded logically from first principles by definite steps until the desired result was attained. These experiments were so epoch-making that Harvey has for centuries been regarded as the founder of experimental medicine. Despite this aspect of his intellect and abilities, Harvey remained in many ways a Galenist. How was it possible to reconcile these two conflicting sides of Harvey? This problem had interested Singer for many years – as is shown by sentences scattered here and there in his writings – and it seems to me that this paper is an attempt to give his explanation, based on Harvey's studies as a student at Padua.



(*Photograph of August 1958 by E A Underwood*)
FIG 1 *Charles Singer*

There is no doubt that Singer had for many years known well some of the writings of Ernest Renan, especially those dealing with mediæval schools of philosophy. When I first read this paper I was surprised to find a mention of Cremonini. This author is not much known nowadays, but he is briefly referred to in many histories of philosophy, especially those dealing with the Middle Ages. Born in 1550, he had taught philosophy at Ferrara for seventeen years before he went to Padua, where he taught the same subject for forty years, until his death in 1631. At that date philosophy at Padua was mainly Aristotelian philosophy, and during all those fifty-seven years Cremonini lectured on a few books of Aristotle. He was so much identified with the Stagyrite that he was called 'Aristoteles Redivivus'. Renan had studied all Cremonini's printed works, and he thought little of them. On the other hand, Renan thought that Cremonini's lectures were enormously influential in stabilizing the Aristotelian tradition. This is shown by the numerous extant copies of notes of his lectures made by his listeners. There is one collection of notes of his lectures over several years; it is in

twenty-two volumes, and all the notes are in the same hand. There is no doubt that Cremonini was a very important man at the time when Harvey was in Padua, and that he had a very wide influence.

It is understandable that, if Cremonini had any direct connexion with medicine at Padua, he must have had some influence on the philosophical aspect of Harvey's thought. The suggestion was quite new to me, as I had never heard of Cremonini in that light. Renan, who knew a lot about Cremonini, had never hinted that he had any medical connexion. Yet Singer says that Cremonini 'taught both philosophy and medicine at Padua for the last forty years of his long life'. I felt sure that Singer must have got this information from somewhere, and it seemed very probable that he had consulted a mid-nineteenth century work in many volumes which was close to his hand. I pulled down the appropriate volume of my copy of that work, and was surprised to find the statement that Cremonini's chair was 'of philosophy and medicine'. If this statement – in a work which is usually very accurate – was true, then Cremonini must have taught Harvey medicine at Padua. I was frankly sceptical about Cremonini's double chair, and since then consultation of many other works has failed to give the slightest confirmation. All the evidence is in favour of the fact that the title of Cremonini's chair was *philosophiæ interpres ordinarius*, and that it had no connexion with medicine. What clinches the matter is a broadsheet of the University of Padua dated 1593, three years after Cremonini was translated from Ferrara. The broadsheet sets out the names of the professors of the various subjects in all the Faculties. There were two professors of the theory, and two professors of the practice of medicine – none of whom was Cremonini. He appears as one of the two professors of philosophy, and he lectured that year on the 'De Anima' of Aristotle.

My first impression was therefore probably right – that the reference work which I had first consulted was that to which Singer had also turned. This probably led to his erroneous statement that Cremonini held a chair of philosophy *and* of medicine. If this statement is now disproved – as I think it is – then any influence of Cremonini on Harvey's official studies is ruled out. But it should be noted that the disproof does not necessarily rule out any influence of Cremonini on Harvey. Harvey went to Padua to study medicine, but he had already taken an Arts degree at Cambridge. At Padua he was one of the few medical students who were admitted to the Jurist University, and it is quite possible that he attended some of Cremonini's lectures and came under his influence. In this short paper Singer has opened up an interesting problem.

It is perhaps not much realized that among the great scientists and medical men Singer had strong likes and dislikes, and that in the case of a man with whose work he was not in sympathy this impression could be caused by many factors other than a disinterested assessment of the importance of his work. He might, for example, consider that the portraits of a great scientist seemed to show him as a dull-witted fellow, and that therefore there must be some snag in his work. Just in the same way that Singer thought that the ability of a certain Great Officer of State could not be very high because he looked like a pig. Singer would not be critical of the famous man's work: he would simply ignore him.

It is very seldom that Singer expresses any deep personal feelings in his writings, and it is seldom that one can even guess them from his own words. There is, however, a notable exception. I have indicated Singer's life-long devotion to the Hippocratic writings. Many years ago he delivered an address on Francis Adams of Banchory, the country-practitioner who was a great scholar, and who had translated the works of Paul of Ægina and many of the Hippocratic treatises. Adams died in 1861, fifteen years before Singer was born. Singer ended his address with these words:

'I have said that I never met or could have met my friend. But often have I felt that he and I have walked and talked together. I have tried to gather something from his rich learning and his yet richer wisdom and humanity. I know that he and I are very different sorts of men who have had very different sorts of lives and have worked in very different ways. Yet I like to feel that he had some regard and respect for me since I feel that for him which I cannot put into words.'

All who came in touch with Singer must have realized that he was a voluminous correspondent. He had friends all over the world, and he kept in touch with them constantly, not just by short notes, but by long, chatty letters, many dictated, but many written in his own beautifully clear round hand, which degenerated practically not at all even up to the time of his death. These personal letters brought great joy and encouragement to many who received them.

This was a personal and private correspondence. He also had his 'official' correspondence – shoals of letters from not-too-diligent seekers after truth: requests for information, for illustrations, for all sorts of things. Singer had an active mind and a

heart of gold, and the combination invariably led to some sort of reply, even when the request was in relation to a subject about which he knew little. His replies often hit the mark. But Homer sometimes nods – and the nodding could be very unfortunate if his correspondent happened to quote his reply verbatim. Singer had quite a powerful imagination, and once embarked on dictation or writing letters, he took some stopping.

In his personal life Singer's two greatest interests were talking and reading. As a conversationalist he was always interesting and informative, and he could be witty and brilliant. His mind flitted like lightning from one subject to another. He had an immense fund of stories, many of which related to persons whom he had known in the past. His tales of professors were legion – such as that of the absent-minded Sir John Burdon Sanderson, who met a friend in the street and had a few minutes' conversation with him. They had hardly parted when Sanderson called his friend back and said: 'When you met me, which way was I going, this way or that way?' His friend said 'That way'. 'Oh, well, that's all right', replied Sanderson, 'then I have had my lunch after all'.

Singer's personal reading is not an easy subject to talk about. His great memory could produce allusions from books that he had read years before, as if it had been the previous week. He read all sorts of literature bearing on his own subjects. After that, first and foremost, the Bible. During the last twenty years of his life he read many novels, mainly of a light and humorous sort, such as those by P G Wodehouse – for he could not stand anything sordid or tragic. He had a high opinion of Nevil Shute's novels. Of English classical literature he probably read mostly Dickens, especially 'The Pickwick Papers'. He did not like Scott or any other historical novelist. George Eliot, Chaucer and Milton he sometimes read. He had read Shakespeare, but I seldom saw him with a work of the dramatist in his hand. The Romantics he read not at all. On the whole he may have had most interest in Milton. In music he professed to have no interest whatever, and he often told me that he did not understand how musicians could keep practising the same bars over and over again; it seemed to him such a waste of time. I almost came to the decision that he was tone deaf. Then in 1953 he saw the Coronation on television. I asked him what impressed him most, and without the slightest hesitation he replied: 'Oh, the music of course; I thought it was wonderful.'

I must pass over virtually in silence those last years which saw the publication of several other books and of the great 'History of Technology'. This work involved a colossal task of organization and editorship. Each volume had to be planned some time in advance; contributors had to be chosen and approached, and thereafter the correspondence with some of them might be extensive. The first volume of that great work was published in 1954. By the late summer of 1956 the second volume had not been published. But I well remember his delighted excitement when he received on November 2 of that year – his 80th birthday – a special advance copy of the second volume, bound in full leather, as a surprise gift from his co-editors.

It was very interesting to watch how he now subordinated almost everything to the completion of this work. He had by now given up some of his minor recreations. But he kept up his enthusiasm for succulent plants, which had interested him for many years, and of which he had a good collection. He kept up, too, his interest in biology, especially animal morphology, which for several years had been his only subject of study at Oxford. It had remained throughout life one of his abiding interests; and at the age of 65 he had agreed to teach practical biology in his own home to boys of the King's School at Canterbury and other schools evacuated to Cornwall – with conspicuous success.

During these last years it was interesting to watch, too, how two of his recreations were quite unaffected. His conversation was as quick, as intelligent, and as allusive as ever, and his stories never flagged. As a writer of letters he was as keen and as indefatigable as ever. During the years 1957 and 1958 the last three volumes of the great work were published, to his immense delight and satisfaction. The driving force behind these last great tasks was his will, his enthusiasm, and the 'æquanimitas' that halved the burden.

Samuel Johnson said of Richard Mead, that great eighteenth century physician and collector: 'Dr. Mead lived more in the broad sunshine of life than almost any man.' I believe that these words could, quite as appropriately and with equal justice, be applied to Charles Singer.

Sir Arthur MacNalty
(*Ministry of Health, London*)

There is more in 'De Generatione Animalium' of scientific value than some authorities appreciate – Harvey's observations on the eggs of animals foreshadowed von Baer's discovery of the mammalian ovum and his experimental work on

infection and transmission of disease halted on the threshold of bacteriology. This book has suffered by indifferent translation, as Singer agreed, and I am glad to know that Professor K J Franklin is engaged upon a new translation with annotations.

Some fifty years ago Charles Singer called on me at Brompton Hospital where I was then resident medical officer. He was medical registrar to the neighbouring Cancer Hospital and was investigating the composition of the gastric juice in certain diseases. He desired to extend his researches to cases of pulmonary tuberculosis and I obtained permission and facilities for him to do so from the House and Medical Committees. This early work was afterwards published in the *Quarterly Journal of Medicine*[1]. Later he confided to me that he was going up for the MRCP and asked to accompany me on my morning rounds to refresh his knowledge of cardiac and pulmonary diseases. The acquaintance thus begun ripened into a life-long friendship.

Singer forsook clinical medicine to become the historian of science and medicine at Oxford. In this sphere he received every encouragement from Sir William Osler and at Osler's house I frequently met Singer and his wife, a distinguished historian of science. Singer, by his investigations, published books and papers, and teaching first at Oxford and then at University College London, soon achieved world-wide reputation as a historian of science and medicine. I put science first for he took zoology at Oxford and in one of his last books returned to biology 'with a recollected love'.

[1]**Schryver S B & Singer C** (1912-13) *Quart. J. Med.* **6**, 71, 309

Singer had a generous and kind disposition. Many of his friends will remember his gifts of erudition, wit and humour either at the Athenæum Club or when they were guests at his house in Cornwall, where he and Mrs Singer were always glad to welcome them. He was fertile in ideas, active in good causes, ready to help others, to right wrongs or to redress grievances. In medical history his disciples will carry on the torch which he so brightly kindled. His end was peaceful, the close of a well-spent life. The world is the poorer for Charles Singer's passing but his works abide with us.

Meeting February 7 1962

A paper on **Captain Cook's Surgeons** was read by Dr W E Snell (*Colindale Hospital, London*). This paper will appear in *Medical History*.

Meeting May 2 1962

A paper on **The Apothecary in Provincial Guilds** was read by Dr T D Whittet (*University College Hospital, London*). This paper will appear in *Medical History*.

Meeting June 6 1962

The following papers were read:

Some Landmarks in British Urology
Mr H P Winsbury-White (*London*)

The History of Colon Surgery
Mr Rodney Maingot (*London*)